# NYSBC Microdiffraction Beamline (NYX)

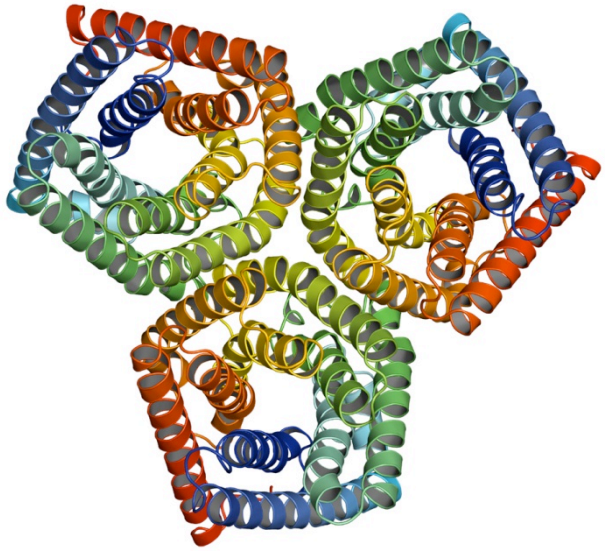
## Opportunities for NYSBC Science at NSLS-II

- Diffraction from micron-sized crystals and rastered scans for optimized diffraction from larger crystals of challenging biological macromolecules and complexes
- Access to a broad range of resonant edges for anomalous diffraction (MAD and SAD) phasing, from U $M_V$ (3.5 keV) to Se K (12.7 keV) to U $L_{III}$ (17.2 keV)
- Optimization of anomalous scattering from high energy resolution for sharp transitions at resonant edges and lower energy for increased f '' with light elements (sulfur)

## Example Science Areas and Impact

- MEMBRANE PROTEINS: Challenging structural problems with high relevance in neurobiology & metabolic disorders
- MACROMOLECULAR COMPLEXES: Protein-protein interactions in signaling complexes and protein-nucleic acid complexes in transcription or replication
- METHODS DEVELOPMENT: Supports efforts for methods to improve phase evaluation and enhance resolution

**New York Structural Biology Center (NYSBC)** hosts dozens of investigator groups at ten premier institutions



Homolog structure of the SLAC1 anion channel for closing stomata in leaves. Here the trimeric channel protein is shown as viewed from outside the membrane of a guard cell. Each protomer is colored spectrally from the amino-terminus (blue) to carboxy-terminus. Chen et al., *Nature* **467**,1074 (2010).

## Beamline Capabilities

**TECHNIQUE:** macromolecular crystallography

**Source:** undulator on a low-β straight section

**BEAM CROSS-SECTION:** 5-50 μm

**ENERGY RANGE:** 3.5 – 17.5 keV

**ENERGY RESOLUTION:** $\Delta E/E \sim 5 \times 10^{-5}$

U.S. DEPARTMENT OF ENERGY

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